AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the Application. No new matter has been introduced by way of the claim amendments. Current additions to the claims are noted with underlined text. Current deletions from the claims are indicated by text ~~strikethrough~~ or [[double bracketing]]. The status of each claim is indicated in parenthetical expression following the claim number.

What is claimed is:

1. (Currently Amended) A method comprising the steps of:

a) dispersing functionalized CNTs in a solvent to form a dispersion;

wherein the functionalized CNTs comprise oxidized, fluorinated CNTs;

wherein the oxidized, fluorinated CNTs are prepared by a process comprising:

a1) oxidizing unfunctionalized CNTs to form oxidized CNTs comprising opened ends;

wherein the opened ends comprise carboxylic acid groups; and

a2) fluorinating the oxidized CNTs to form the oxidized, fluorinated CNTs;

wherein the fluorinating step is conducted after the oxidizing step; and

wherein the fluorinating step comprises attaching fluorine moieties to sidewalls of the oxidized CNTs;

b) adding an epoxy resin to the dispersion to form a mixture;

c) removing the solvent from the mixture to form a substantially~~largely~~ solvent-free mixture;

d) adding a curing agent to the substantially solvent-free mixture; and

e) curing the substantially solvent-free mixture to form a CNT-epoxy composite;~~.~~

wherein the functionalized CNTs are dispersed and integrated in the CNT-epoxy composite ~~into the epoxy matrix~~.

2. (Currently Amended) The method of claim 1, wherein the ~~step of~~ dispersing step comprises ~~involves~~ ultrasonication.

3. (Original) The method of claim 1, wherein the solvent is selected from the group consisting of aqueous solvents, non-aqueous solvents, and combinations thereof.

4. (Original) The method of claim 1, wherein the epoxy resin is selected from the group consisting of DGEBA, Novolac epoxy, cycloaliphatic epoxy, brominated epoxy, and combinations thereof.

5. (Currently Amended) The method of claim 1, wherein the step of adding an epoxy resin comprises a mixing of the dispersion and the epoxy resin ~~of the mixture components~~.

6. (Currently Amended) The method of claim 5, wherein the mixing is conducted ~~carried out~~ with a high-shear mixer.

7. (Currently Amended) The method of claim 1, wherein the removing step ~~of removing solvent~~ comprises heating in vacuum.

8. (Original) The method of claim 1, wherein the curing agent is selected from the group consisting of cycloaliphatic amines, aliphatic amines, aromatic amines, and combinations thereof.

9. (Currently Amended) The method of claim 1, wherein the step of adding a curing agent comprises a mixing of the curing agent and the substantially solvent-free mixture. ~~wherein the curing agent is added with mixing.~~

10. (Cancelled)

11. (Currently Amended) The method of claim 1, wherein the unfunctionalized CNTs comprise ~~are fluorinated~~ SWNTs.

12. (Currently Amended) The method of claim 1, wherein the CNT-epoxy composite possesses at least one enhanced property selected from the group consisting of mechanical properties, thermal properties, electrical properties, and combinations thereof~~, relative to the native epoxy; and~~.

wherein the at least one enhanced property is measured relative to a native epoxy not comprising CNTs.

13. (Currently Amended) The method of claim 12, wherein ~~such~~ the at least one enhanced mechanical property~~ies are~~ is selected from the group consisting of an increase in Young's modulus, an increase in ~~the~~ tensile strength, an enhanced elongation-to-break, an enhanced load transfer to the functionalized CNTs~~ in the composite~~, and combinations thereof.

14. (Cancelled)

15. (Currently Amended) The method of claim 1[[4]], wherein the unfunctionalized CNTs comprise a carbon nanotube type~~ are~~ selected from the group consisting of single-wall carbon nanotubes, multi-wall carbon nanotubes, double-wall carbon nanotubes, fullerene tubes, Buckytubes, graphite fibrils, and combinations thereof.

16. (Currently Amended) The method of claim 1[[4]], further comprising purifying ~~wherein~~ the unfunctionalized CNTs~~ are purified~~ before the oxidizing step.

17. (Currently Amended) The method of claim 1[[4]], further comprising sorting the unfunctionalized CNTs~~ wherein the CNTs are pre-sorted~~ by a property;

wherein the property is selected from the group consisting of length, diameter, chirality, conductivity~~,~~ and combinations thereof~~;~~, and

wherein the sorting step takes place before the oxidizing step.

18. (Currently Amended) The method of claim 1[[4]], further comprising ~~a step of~~ reacting the oxidized, fluorinated CNTs~~ functionalized CNTs, said functionalized CNTs comprising fluorine attached to their sidewalls and carboxylic acid groups attached to their ends,~~ with at least one diamine~~s~~ to form oxidized, amino-functionalized CNTs;

wherein the at least one diamine comprises a first amino group and a second

amino group;

wherein the step of reacting comprises displacing the fluorine moieties and bonding first amino groups comprising the at least one diamine to sidewalls of the oxidized, fluorinated CNTs; and

wherein second amino groups comprising the at least one diamine are not bonded to sidewalls of the oxidized, fluorinated CNTs. ~~to yield amino-functionalized CNTs comprising amino groups attached to the CNT sidewalls.~~

19. (Currently Amended) The method of claim 1[[4]], wherein the oxidized, fluorinated ~~functionalized~~ CNTs integrate into the CNT-epoxy composite during the curing step;

wherein integration comprises ~~an epoxy matrix during curing by~~ forming ester linkages between the oxidized, fluorinated CNTs and the epoxy resin;

wherein the ester linkages are formed by a reaction between the carboxylic acid groups ~~attached to the CNT ends~~ and epoxide groups comprising ~~attached to~~ the epoxy resin.

20. (Currently Amended) The method of claim 18~~14~~, wherein the oxidized, amino-functionalized CNTs integrate into the CNT-epoxy composite during the curing step;

wherein the at least one diamine comprises the curing agent; and

wherein integration comprises a reaction of second amino groups comprising the at least one diamine with ~~an epoxy matrix during curing via bond-forming reactions between the fluorine groups on the CNT sidewalls and diamine curing agents, and further comprising bond-forming reactions between diamines attached on one end to the CNTs and~~ epoxide groups comprising the~~on an~~ epoxy resin ~~at another end~~.

21. (Currently Amended) A method comprising the steps of:~~The method of claim 1, wherein the functionalized CNTs are made by a process comprising the steps of:~~

a) dispersing functionalized CNTs in a first solvent to form a dispersion of functionalized CNTs;

wherein the functionalized CNTs comprise sidewall carboxylic acid-functionalized CNTs;

wherein the sidewall carboxylic acid-functionalized CNTs

are prepared by a process comprising:

a1) dispersing unfunctionalized CNTs in a second solvent to form a dispersion of unfunctionalized CNTs;

~~b~~a2) adding an organic acyl peroxide of a dicarboxylic acid to the dispersion of unfunctionalized CNTs to form a reaction mixture; and

~~e~~a3) heating the reaction mixture to form~~produce~~ free radicals;

wherein the free radicals are of the type

$HO(O)C\text{-}(CH_2)_n\cdot$; and

wherein the free radicals react with sidewalls of the unfunctionalized CNTs to form the~~that subsequently add to the CNT sidewalls to form~~ sidewall carboxylic acid-functionalized CNTs~~.~~;

b) adding an epoxy resin to the dispersion of functionalized CNTs to form an epoxy mixture;

c) removing the first solvent from the epoxy mixture to form a substantially solvent-free mixture;

d) adding a curing agent to the substantially solvent-free mixture; and

e) curing the substantially solvent-free mixture to form a CNT-epoxy composite;

wherein the functionalized CNTs are dispersed and integrated in the CNT-epoxy composite.

22. (Currently Amended) The method of claim 21, wherein the unfunctionalized CNTs comprise a carbon nanotube type~~are~~ selected from the group consisting of single-wall carbon nanotubes, multi-wall carbon nanotubes, double-wall carbon nanotubes, fullerene tubes, Buckytubes, graphite fibrils, and combinations thereof.

23. (Currently Amended) The method of claim 21, further comprising purifying ~~wherein~~ the unfunctionalized CNTs ~~are purified~~ before step a1.

24. (Currently Amended) The method of claim 21, further comprising sorting the unfunctionalized CNTs ~~wherein the CNTs are sorted~~ by a property;

wherein the property is selected from the group consisting of length, diameter, chirality, conductivity, and combinations thereof; and

wherein the sorting step takes place before step a1.

25. (Currently Amended) The method of claim 21, wherein the organic acyl peroxide of the dicarboxylic acid is selected from the group consisting of succinic acid peroxide, glutaric acid peroxide, and combinations thereof.

26. (Currently Amended) The method of claim 21, further comprising ~~a step of~~ reacting the sidewall carboxylic acid-functionalized CNTs with a chlorinating agent to form sidewall acyl chloride-functionalized CNTs.

27. (Original) The method of claim 26, wherein the chlorinating agent is selected from the group consisting of Cl_2, $SOCl_2$, and combinations thereof.

28. (Currently Amended) The method of claim 26, further comprising ~~a step of~~ reacting the sidewall acyl chloride-functionalized CNTs with a diamine to form amino-functionalized CNTs;

wherein the diamine comprises a first amino group and a second amino group;

wherein reacting the sidewall acyl chloride-functionalized CNTs with the diamine comprises bonding first amino groups comprising the diamine with the sidewall acyl chloride-functionalized CNTs to form amides; and

wherein the amides are terminated with second amino groups comprising the diamine.

29. (Currently Amended) The method of claim 21, wherein the sidewall carboxylic acid-functionalized CNTs integrate into the CNT-epoxy composite during the curing step;

wherein integration comprises ~~an epoxy matrix during curing by~~ forming ester linkages between the sidewall carboxylic acid-functionalized CNTs and the epoxy resin;

wherein the ester linkages are formed by a reaction between the carboxylic acid groups ~~attached to the CNTs~~ and epoxide groups comprising ~~attached to~~ the epoxy resin.

30. (Currently Amended) The method of claim 26, wherein the sidewall acyl chloride-functionalized CNTs ~~are~~ integrate~~d~~ into the CNT-epoxy composite during the curing step;

wherein the curing agent comprises a diamine;

wherein the diamine comprises a first amino group and a second amino group; and

wherein integration comprises a first reaction of first amino groups comprising the diamine with the sidewall acyl chloride-functionalized CNTs to form amides and a second reaction of second amino groups comprising the diamine with epoxide groups comprising the epoxy resin.~~an epoxy matrix during curing via bond forming reactions between the acyl chloride groups on the CNT sidewalls and diamine curing agents.~~

31. (Currently Amended) The method of claim 28, wherein the amino-functionalized CNTs ~~are~~ integrate~~d~~ into the CNT-epoxy composite during the curing step;

wherein integration comprises a reaction of second amino groups comprising the diamine with ~~an epoxy matrix during curing via bond forming reactions between amino groups attached to the CNTs and~~ epoxide groups comprising ~~attached to~~ the epoxy resin.

32. (Currently Amended) A method comprising the steps of:~~The method of claim 1, wherein the functionalized CNTs are made by a process comprising the steps of:~~

a) dispersing functionalized CNTs in a first solvent to form a dispersion of functionalized CNTs;

wherein the functionalized CNTs comprise fluorinated, hydroxyl-functionalized CNTs;

wherein the fluorinated, hydroxyl-functionalized CNTs are prepared by a process comprising:

a1) reacting unfunctionalized CNTs with fluorine to form ~~yield~~ fluorinated CNTs;

~~b~~a2) dispersing the fluorinated CNTs in a second solvent to form a dispersion of fluorinated CNTs;

~~c~~a3) reacting a dialcohol with a metal hydroxide to form~~from~~ a metal salt of the dialcohol; and

~~d~~a4) reacting the metal salt of the dialcohol with the fluorinated CNTs to form~~yield~~ the fluorinated, hydroxyl-functionalized CNTs;~~.~~

b) adding an epoxy resin to the dispersion of functionalized CNTs to form a mixture;

c) removing the first solvent from the mixture to form a substantially solvent-free mixture;

d) adding a curing agent to the substantially solvent-free mixture; and

e) curing the substantially solvent-free mixture to form a CNT-epoxy composite;

wherein the functionalized CNTs are dispersed and integrated in the CNT-epoxy composite.

33. (Currently Amended) The method of claim 32, further comprising ~~a step of~~ reacting the fluorinated, hydroxyl-functionalized CNTs with epichlorohydrin to form fluorinated, epoxide-functionalized CNTs.

34. (Currently Amended) The method of claim 32, wherein the unfunctionalized CNTs comprise a carbon nanotube type~~are~~ selected from the group consisting of single-wall carbon nanotubes, multi-wall carbon nanotubes, double-wall carbon nanotubes, fullerene tubes, Buckytubes, graphite fibrils, and combinations thereof.

35. (Currently Amended) The method of claim 32, further comprising purifying ~~wherein~~ the unfunctionalized CNTs ~~are purified~~ before step a1.

36. (Currently Amended) The method of claim 32, further comprising sorting the unfunctionalized CNTs ~~wherein the CNTs are sorted~~ by a property;

wherein the property is selected from the group consisting of length, diameter, chirality, conductivity, and combinations thereof; and

wherein the sorting step takes place before the oxidizing step.

37. (Currently Amended) The method of claim 32, wherein the dialcohol comprises~~is~~ bisphenol-A.

38. (Currently Amended) The method of claim 32, wherein the metal hydroxide is selected from the group consisting of LiOH, NaOH, KOH, and combinations thereof.

39. (Currently Amended) The method of claim 33, wherein the fluorinated, epoxide-functionalized CNTs ~~are~~ integrated into the CNT-epoxy composite during the curing step;

wherein the curing agent comprises at least one amine; and

wherein integration comprises a reaction between the at least one amine comprising the curing agent and epoxide groups comprising the fluorinated, epoxide-functionalized CNTs. ~~an epoxy matrix during curing via bond-forming reactions between amino groups attached to the curing agent.~~

40. (Currently Amended) A CNT-epoxy polymer composite prepared by a process ~~made by a method~~ comprising the steps of:

a) dispersing functionalized CNTs in a solvent to form a dispersion;

wherein the functionalized CNTs comprise oxidized, fluorinated CNTs;

wherein the oxidized, fluorinated CNTs are prepared by a process comprising:

a1) oxidizing unfunctionalized CNTs to form oxidized CNTs comprising opened ends;

wherein the opened ends comprise carboxylic acid groups; and

a2) fluorinating the oxidized CNTs to form the oxidized, fluorinated CNTs;

wherein the fluorinating step is conducted after the oxidizing step; and

wherein the fluorinating step comprises attaching fluorine moieties to sidewalls of the oxidized CNTs;

b) adding an epoxy resin to the dispersion to form a mixture;

c) removing the solvent from the mixture to form a substantially~~largely~~ solvent-free mixture;

d) adding a curing agent to the substantially solvent-free mixture; and

e) curing the substantially solvent-free mixture to form the ~~a functionalized~~ CNT-epoxy polymer composite;~~,~~

wherein the functionalized CNTs are dispersed and integrated in the CNT-epoxy polymer composite. ~~into the epoxy matrix.~~

41. (Cancelled)

42. (Currently Amended) The CNT-epoxy polymer composite prepared by the process of claim 40, wherein the ~~step of~~ dispersing step comprises ~~involves~~ ultrasonication.

43. (Currently Amended) The CNT-epoxy polymer composite prepared by the process of claim 40, wherein the solvent is selected from the group consisting of aqueous solvents, non-aqueous solvents, and combinations thereof.

44. (Currently Amended) The CNT-epoxy polymer composite prepared by the process of claim 40, wherein the epoxy resin is selected from the group consisting of DGEBA, Novolac epoxy, cycloaliphatic epoxy, brominated epoxy, and combinations thereof.

45. (Currently Amended) The CNT-epoxy polymer composite prepared by the process of claim 40, wherein the step of adding an epoxy resin comprises a mixing of the dispersion and the epoxy resin ~~mixture components~~.

46. (Currently Amended) The CNT-epoxy polymer composite prepared by the process of claim 45, wherein the mixing is conducted ~~carried out~~ with a high-shear mixer.

47. (Currently Amended) The CNT-epoxy polymer composite prepared by the process of claim 40, wherein the ~~step of~~ removing step ~~solvent~~ comprises heating in vacuum.

48. (Currently Amended) The CNT-epoxy polymer composite prepared by the process of claim 40, wherein the curing agent is selected from the group consisting of cycloaliphatic amines, aliphatic amines, aromatic amines, and combinations thereof.

49. (Currently Amended) The CNT-epoxy polymer composite prepared by the process of claim 40, wherein the step of adding a curing agent comprises a mixing of the curing agent and the substantially solvent-free mixture~~wherein the curing agent is added with mixing~~.

50. (Cancelled)

51. (Currently Amended) The CNT-epoxy polymer composite prepared by the process of claim 40, wherein the functionalized CNTs comprise~~are fluorinated~~ SWNTs.

52. (Currently Amended) The CNT-epoxy polymer composite prepared by the process of claim 40, wherein the CNT-epoxy polymer composite possesses at least one enhanced mechanical property~~ies relative to the native epoxy.~~;

wherein the at least one enhanced mechanical property is measured relative to a native epoxy not comprising CNTs.

53. (Currently Amended) The CNT-epoxy polymer composite prepared by the process of claim 52, wherein ~~such~~ the at least one enhanced mechanical property~~ies~~ is~~are~~ selected from the group consisting of an increase in Young's modulus, an increase in ~~the~~ tensile strength, an enhanced elongation-to-break, an enhanced load transfer to the functionalized CNTs~~ in the composite~~, and combinations thereof.

54. (Cancelled)

55. (Currently Amended) The CNT-epoxy polymer composite prepared by the process of claim 40[[54]], wherein the unfunctionalized CNTs comprise a carbon nanotube type~~ are~~ selected from the group consisting of single-wall carbon nanotubes, multi-wall carbon nanotubes, double-wall carbon nanotubes, fullerene tubes, Buckytubes, graphite fibrils, and combinations thereof.

56. (Currently Amended) The CNT-epoxy polymer composite prepared by the process of claim 40[[54]], wherein the process further comprises~~ing a step of~~ reacting the oxidized, fluorinated ~~functionalized~~ CNTs with at least one diamine to form oxidized, amino-functionalized CNTs;~~,~~

wherein the at least one diamine comprises a first amino group and a second amino group;

wherein the step of reacting comprises displacing the fluorine moieties and bonding first amino groups comprising the at least one diamine to sidewalls of the

oxidized, fluorinated CNTs; and

wherein second amino groups comprising the at least one diamine are not bonded to sidewalls of the oxidized, fluorinated CNTs.~~said functionalized CNTs comprising fluorine attached to their sidewalls and carboxylic acid groups attached to their ends, with diamines to yield amino-functionalized CNTs comprising amino groups attached to the CNT sidewalls.~~

57. (Currently Amended) The CNT-epoxy polymer composite prepared by the process of claim 40[[54]], wherein the oxidized, fluorinated CNTs integrate into the CNT-epoxy polymer composite ~~an epoxy matrix~~ during the curing step; and

wherein integration comprises ~~by~~ forming ester linkages between the oxidized, fluorinated CNTs and the epoxy resin;

wherein the ester linkages are formed by a reaction between the carboxylic acid groups ~~attached to the CNT ends~~ and epoxide groups comprising ~~attached to~~ the epoxy resin.

58. (Currently Amended) The CNT-epoxy polymer composite prepared by the process of claim 56[[4]], wherein the oxidized, fluorinated CNTs integrate into the CNT-epoxy polymer composite ~~an epoxy matrix~~ during the curing step;

wherein the at least one diamine comprises the curing agent;

wherein the at least one diamine comprises a first amino group and a second amino group; and

wherein integration comprises a reaction of second amino groups comprising the at least one diamine with epoxide groups comprising the epoxy resin.

~~via bond-forming reactions between the fluorine groups on the CNT sidewalls and diamine-curing agents, and further comprising bond-forming reactions between diamines attached on one end to the CNTs and epoxide groups on an epoxy resin at another end.~~

59. (Currently Amended) A~~The~~ CNT-epoxy polymer composite prepared by a process ~~of claim 40, wherein the functionalized CNTs are made by a process~~ comprising the steps of:

a) dispersing functionalized CNTs in a first solvent to form a dispersion of functionalized CNTs;

wherein the functionalized CNTs comprise sidewall carboxylic acid-functionalized CNTs;

wherein the sidewall carboxylic acid-functionalized CNTs are prepared by a process comprising:

a1) dispersing unfunctionalized CNTs in a second solvent to form a dispersion of unfunctionalized CNTs;

~~b~~a2) adding an organic acyl peroxide of a dicarboxylic acid to the dispersion of unfunctionalized CNTs to form a reaction mixture; and

~~c~~a3) heating the reaction mixture to form~~produce~~ free radicals;

wherein the free radicals are of the type

$HO(O)C\text{-}(CH_2)_n^{\cdot}$; and

wherein the free radicals react with sidewalls of the unfunctionalized CNTs to form the ~~that subsequently add to the CNT sidewalls to form~~ sidewall carboxylic acid-functionalized CNTs~~.~~;

b) adding an epoxy resin to the dispersion of functionalized CNTs to form an epoxy mixture;

c) removing the first solvent from the epoxy mixture to form a substantially solvent-free mixture;

d) adding a curing agent to the substantially solvent-free mixture; and

e) curing the substantially solvent-free mixture to form the CNT-epoxy polymer composite;

wherein the functionalized CNTs are dispersed and integrated in the CNT-epoxy polymer composite.

60. (Currently Amended) The CNT-epoxy polymer composite prepared by the process of claim 59, wherein the unfunctionalized CNTs comprise a carbon nanotube type ~~are~~ selected from the group consisting of single-wall carbon nanotubes, multi-wall carbon nanotubes, double-wall carbon nanotubes, fullerene tubes, Buckytubes, graphite fibrils, and combinations thereof.

61. (Currently Amended) The CNT-epoxy polymer composite prepared by the process of claim 59, wherein the process further comprisesing a step of reacting the sidewall carboxylic acid-functionalized CNTs with a chlorinating agent to form sidewall acyl chloride-functionalized CNTs.

62. (Currently Amended) The CNT-epoxy polymer composite prepared by the process of claim 61, wherein the process further comprisesing a step of reacting the sidewall acyl chloride-functionalized CNTs with a diamine to form amino-functionalized CNTs;.

wherein the diamine comprises a first amino group and a second amino group;

wherein reacting the sidewall acyl chloride-functionalized CNTs with the diamine comprises bonding first amino groups comprising the diamine with the sidewall acyl chloride-CNTs to form amides; and

wherein the amides are terminated with second amino groups comprising the diamine.

63. (Currently Amended) The CNT-epoxy polymer composite prepared by the process of claim 59, wherein the sidewall carboxylic acid-functionalized CNTs integrate into the CNT-epoxy polymer composite during the curing step;

wherein integration comprises an epoxy matrix during curing by forming ester linkages between the the sidewall carboxylic acid-functionalied CNTs and the epoxy resin;

wherein the ester linkages are formed by a reaction between the carboxylic acid groups attached to the CNTs and epoxide groups comprisingattached to the epoxy resin.

64. (Currently Amended) The CNT-epoxy polymer composite prepared by the process of claim 61, wherein the sidewall acyl chloride-functionalized CNTs are integrated into the CNT-epoxy polymer composite during the curing step;

wherein the curing agent comprises a diamine;

wherein the diamine comprises a first amino group and a second amino group; and

wherein integration comprises a first reaction of first amino groups comprising

the diamine with the sidewall acyl chloride-functionalized CNTs to form amides and a second reaction of second amino groups comprising the diamine with epoxide groups comprising the epoxy resin.~~an epoxy matrix during curing via bond-forming reactions between the acyl chloride groups on the CNT sidewalls and diamine curing agents.~~

65. (Currently Amended) The CNT-epoxy polymer composite prepared by the process of claim 62, wherein the amino-functionalized CNTs ~~are~~ integrated into the CNT-epoxy polymer composite during the curing step;

wherein integration comprises a reaction of second amino groups comprising the diamine with ~~an epoxy matrix during curing via bond-forming reactions between amino groups attached to the CNTs and~~ epoxide groups comprising ~~attached to~~ the epoxy resin.

66. (Currently Amended) A~~The~~ CNT-epoxy polymer composite ~~of claim 40, wherein the functionalized CNTs are made~~ prepared by a process comprising the steps of:

a) dispersing functionalized CNTs in a first solvent to form a dispersion of functionalized CNTs;

wherein the functionalized CNTs comprise fluorinated, hydroxyl-functionalized CNTs;

wherein the fluorinated, hydroxyl-functionalized CNTs are prepared by a process comprising:

a1) reacting unfunctionalized CNTs with fluorine to form~~yield~~ fluorinated CNTs;

~~b~~a2) dispersing the fluorinated CNTs in a second solvent to form a dispersion of fluorinated CNTs;

~~c~~a3) reacting a dialcohol with a metal hydroxide to form~~from~~ a metal salt of the dialcohol; and

~~d~~a4) reacting the metal salt of the dialcohol with the fluorinated CNTs to form the~~yield~~ fluorinated, hydroxyl-functionalized CNTs;~~.~~

b) adding an epoxy resin to the dispersion of functionalized CNTs to form a mixtures;

c) removing the first solvent from the mixture to form a substantially

solvent-free mixture;

d) adding a curing agent to the substantially solvent-free mixture; and

e) curing the substantially solvent-free mixture to form the CNT-epoxy polymer composite;

wherein the functionalized CNTs are dispersed and integrated in the CNT-epoxy polymer composite.

67. (Currently Amended) The CNT-epoxy polymer composite prepared by the process of claim 66, wherein the process further comprises~~ing a step of~~ reacting the fluorinated, hydroxyl-functionalized CNTs with epichlorohydrin to form fluorinated, epoxide-functionalized CNTs.

68. (Currently Amended) The CNT-epoxy polymer composite prepared by the process of claim 66, wherein the unfunctionalized CNTs comprise a carbon nanotube type~~ are~~ selected from the group consisting of single-wall carbon nanotubes, multi-wall carbon nanotubes, double-wall carbon nanotubes, fullerene tubes, Buckytubes, graphite fibrils, and combinations thereof.

69. (Currently Amended) The CNT-epoxy polymer composite prepared by the process of claim 66, wherein the dialcohol comprises~~is~~ bisphenol-A.

70. (Currently Amended) The CNT-epoxy polymer composite prepared by the process of claim 66, wherein the fluorinated, epoxide-functionalized CNTs ~~are~~ integrated into the CNT-epoxy polymer composite during the curing step;

wherein the curing agent comprises at least one amine; and

wherein integration comprises a reaction between the at least one amine comprising the curing agent and epoxide groups comprising the fluorinated, epoxide-functionalized CNTs. ~~an epoxy matrix during curing via bond-forming reactions between amino groups attached to the curing agent.~~

71. (Currently Amended) The CNT-epoxy polymer composite prepared by the process of claim 40, further comprising at least one additive selected from the group consisting of inhibitors, curing agents, viscosity modifiers, anti-degradation species, colorants, nanoparticles, nanoclays, and combinations thereof.

72. (Currently Amended) The CNT-epoxy polymer composite prepared by the process of claim 40, further comprising a fiber reinforcement selected from the group consisting of fiberglass, carbon fiber, graphite fabric, KEVLAR, and combinations thereof.

73 – 90 (Cancelled)

91. (New) The CNT-epoxy polymer composite prepared by the process of claim 59, further comprising at least one additive selected from the group consisting of inhibitors, curing agents, viscosity modifiers, anti-degradation species, colorants, nanoparticles, nanoclays, and combinations thereof.

92. (New) The CNT-epoxy polymer composite prepared by the process of claim 59, further comprising a fiber reinforcement selected from the group consisting of fiberglass, carbon fiber, graphite fabric, KEVLAR, and combinations thereof.

93. (New) The CNT-epoxy polymer composite prepared by the process of claim 66, further comprising at least one additive selected from the group consisting of inhibitors, curing agents, viscosity modifiers, anti-degradation species, colorants, nanoparticles, nanoclays, and combinations thereof.

94. (New) The CNT-epoxy polymer composite prepared by the process of claim 66, further comprising a fiber reinforcement selected from the group consisting of fiberglass, carbon fiber, graphite fabric, KEVLAR, and combinations thereof.